INSTRUCTION MANUAL

for

THE NATIONAL MODEL NC-57M AC DC RADIO RECEIVER

A fine Receiver in a compact, modern package at an attractive low price...

National

NC

EST. 1914

PRICE 30 CENTS

National

NC-57M RECEIVER

HIGHLIGHTS . . .

- Frequency coverage 190 kilocycles to 410 kilocycles and 560 kilocycles to 35 megacycles
- Bandspread Tuning for all Frequencies
- Automatic Noise Limiter
- Stabilized Voltage Regulated Circuits
- R.F. Amplifier Stage with Panel Trimmer
- Two I.F. Amplifier Stages
- Built-In Loudspeaker
- AC/DC Power Supply

National Company, Inc.

THE NC-57M RADIO RECEIVER

SECTION 1. DESCRIPTION

1-1. GENERAL

The NC-57M is a superheterodyne Radio Receiver, having a complement of seven tubes plus a voltage regulator and rectifier with a frequency coverage of from 190 kilocycles to 410 kilocycles and from 560 kilocycles to 35 megacycles. This Receiver is designed to provide reception of amplitude modulated voice or music and code telegraph signals throughout its entire frequency range. Operational controls mounted on the front panel are held to a minimum consistent with good operation and full utilization of the circuit features contained in the NC-57M. The separate bandspread control knob and dial scale makes possible fine, vernier-type tuning for any portion of the frequency spectrum covered by the Receiver. The usefulness of this feature will be outstanding on crowded bands such as the amateur or foreign broadcast bands. The NC-57M employs a voltage regulator tube to assure a high order of stability in the high frequency and beat frequency oscillator circuits.

1-2. CIRCUIT

A stage outline of the circuit employed in the NC-57M is given below together with the tube associated with each stage.

R.F. Amplifier	6SG7
Osc.-Mixer	6SB7-Y
First I.F. Amplifier	6SG7
Second I.F. Amplifier	6SG7
Second Det. -.A.V.C. - A.N.L.	6H6
First Audio - C.W.O.	6SL7GT
Audio Output	25L6GT
Voltage Regulator	OA3/VR75
Rectifier	25Z6GT

1-3. TUNING SYSTEM

The three-gang main tuning capacitor, the panel-mounted Trimmer control and five sets of coils are used to tune the frequency range of the Receiver in five tuning bands as shown on the following table. The main tuning capacitor and bandspread capacitor are connected in parallel on all bands.

BAND	FREQUENCY COVERAGE
A	.19 - .41 Mc.
B	12.0 - 35.0 Mc.
C	4.4 - 12.0 Mc.
D	1.55 - 4.4 Mc.
E	0.56 - 1.55 Mc.

It will be noted that Band E encompasses the entire Standard Broadcast Band.

The Amateur bands tuneable by the NC-57M are listed below with their respective receiver band locations and are spread on the bandspread dial by means of the bandspread capacitor approximately as follows:

BAND	AMATEUR BAND	FREQUENCY	DIVISIONS
B	10, 11	27.16 - 29.7 Mc.	62
	15	21.0 - 21.5 Mc.	37
	20	14.0 - 14.4 Mc.	75
C	40	7.0 - 7.3 Mc.	60
D	80	3.5 - 4.0 Mc.	80

The main dial has five scales accurately calibrated directly in megacycles. The respective scales are marked with heavy black scorings to clearly locate for the operator such short-wave features as the Amateur, Police and Foreign Broadcast bands. These locating markers are identified by letters AM, P and F, respectively.

1-4. AUDIO OUTPUT

Two audio output circuits are provided:

(1) The loudspeaker in the NC-57M is a 5 inch PM type capable of faithfully reproducing the ample audio volume delivered by the Receiver. An output transformer is mounted on the loudspeaker to match the impedance of the output tube.

(2) A Phones jack is mounted on the front panel and is wired so as to silence the loudspeaker when headphones are used. The headphone load impedance is not critical permitting a wide range of headphones types, including crystal, to be used.

1-5. POWER SUPPLY

The NC-57M Receiver is designed for AC/DC operation from either 110 volts alternating current or from a 110 volt direct current source. The power input is about fifty watts.

An adapter is available to modify the Receiver for use with a 220 volt AC/DC source. The adapter is a drip-proof housing designed for mounting at the rear of the Receiver cabinet. This housing contains the necessary ballast resistors for 220 volt operation and also mounts a switch to permit operation from either a 110 or 220 volt AC/DC source.

WARNING

This switch MUST be set at the 220 volt position when using a 220 volt input source to prevent damage to the receiver.

SECTION 2. INSTALLATION

2-1. INSTALLATION PROCEDURE

Carefully unpack the receiver from its packing crate and proceed as follows.

(1) Remove the top cover by withdrawing the two screws at the rear of the cabinet holding the cover in place.

(2) Make sure that all the tubes are seated firmly in their sockets.

(3) Replace the top cover.

(4) Connect the power cord P-1 to a suitable 110 volt A.C. or D.C. source of supply. If the receiver is to be connected to a 220 volt source proceed as follows:

a. Remove the top and bottom covers from the Receiver. Remove the button plug at the rear of the receiver.

b. Remove the nut and washer from each of the four mounting screws on each side of the ballast resistor housing.

c. Mount the housing on the rear of the cabinet allowing the mounting screws to enter the openings provided for mounting purposes.

d. Fasten the housing in place by placing a nut and lockwasher on each of the mounting screws protruding into the cabinet.

e. Pass the two leads from the ballast resistor through the opening in the cabinet provided by the removal of the button plug.

f. Remove the wire lead between pin #3 of the 2526 rectifier and the terminal lug supporting one side of the A.C. line cord. Solder the two leads from the ballast resistor in its place.

g. Before turning the A.C. power on loosen the lock about the 110/220 volt switch and set the switch at the 220 volt position. Tighten the lock in place.

h. Replace the top and bottom covers.

(5) Connect the antenna as recommended in section 2-2.

(6) When the receiver is connected to an alternating current source of supply, the cabinet may be grounded by connecting an external ground to the terminal post marked A.C. GND. If objectionable hum is noticed, this can be eliminated by reversing the position of the plug in the A.C. outlet receptacle. If the receiver cabinet is to be grounded when the receiver is connected to a direct current source, the external ground may be connected to the terminal post marked A.C. GND. if objectionable hum is not evident after doing so. If hum is objectionable move the external ground from the A.C. GND. terminal to the D.C. GND. terminal. The polarity of the plug at the outlet cannot be reversed, as in the case of an alternating current source, as the receiver will not operate unless this plug is properly polarized.

(7) Set the controls as recommended in Section 3 for the reception of signals.

NOTE

Where the Receiver is located in the field of a transmitting station, as would be the case when the NC-57M is used as the Receiver in a transmitting station, it is advisable to provide some means of preventing damage to the receiver antenna coil. If a separate receiving antenna is used, a means for disconnecting the antenna from the Receiver or grounding the antenna during transmission periods should be provided.

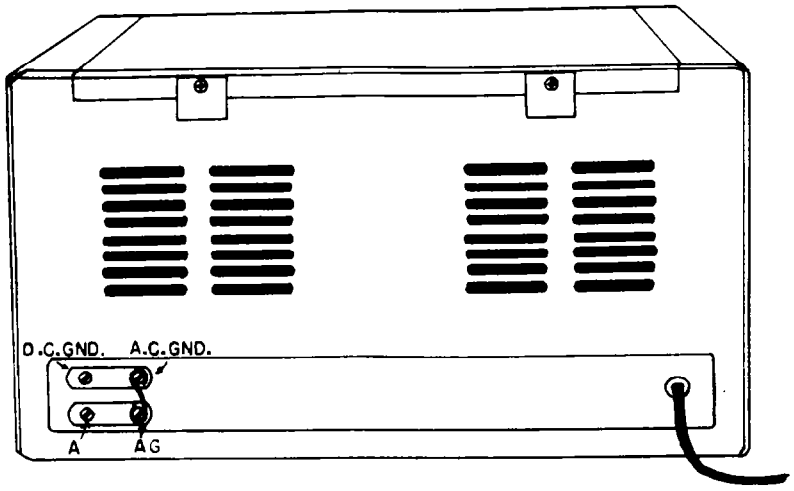

Figure No. 1. Rear View of Receiver

2-2. ANTENNA RECOMMENDATIONS

The antenna input circuit of the NC-57M is arranged for operation from either a single-wire type, doublet type antenna or other types having impedances of 70 ohms or more. The input impedance of the antenna circuit is approximately 300 ohms.

The most practical antenna for use in installations where the Receiver is to be used over a wide range of frequencies is the single-wire type. An antenna length of 50 to 100 feet is recommended although the length is not critical and any length between 25 and 200 feet may be used. In installations where the Receiver is tuned to one frequency or narrow band of frequencies optimum results will be obtained by designing the antenna for the operating frequency. In an installation where the Receiver is to be used as the receiving unit, in a transmitting station, the most efficient operation will usually result from use of the transmitting antenna as a receiving antenna also. For switching the antenna from transmitter to receiver, an antenna change-over relay with good high frequency insulation is recommended.

The method of connecting the various types of antennae to the antenna terminal strip at the rear of the Receiver is as follows:

(1) Single-wire type - connect the antenna to terminal A at the right of the lower strip. If an external ground is to be used refer to par. 2-1 (6).

(2) Doublet type - remove the jumper between terminal A.G. and A.C. GND. Connect the antenna feeders to the two terminals marked A.G. and A.

(3) Concentric transmission line type -- connect the inner conductor to terminal A at the right of the strip and the outer conductor to terminal AG.

SECTION 3. OPERATION

3-1. CONTROLS

This section on controls is presented prior to the actual operating instructions to give the operator of an NC-57M an understanding of the function of each control on the Receiver. All controls are clearly identified by front panel markings and are arranged in a manner to facilitate operation.

The R.F. GAIN control adjusts the sensitivity (ability to receive weak and distant stations) of the Receiver from a minimum at the extreme counterclockwise position of the knob to a maximum at the extreme clockwise position. This is accomplished by adjustment of the amplification of the R.F. and I.F. amplifier stages.

The BAND switch has five positions and serves to select the band of frequencies to be tuned by the Receiver. The five positions are marked with identifying band designations which correspond to the markings which appear on the main tuning dial.

The TRIMMER control operates a tuning capacitor trimmer which is connected across the first R.F. amplifier main tuning capacitor section. The trimmer control is used to tune the R.F. amplifier stage properly under a wide variety of antenna loading conditions.

The TONE control adjusts the tonal value of the audio output of the Receiver. The three positions select a tonal output as follows: High--normal receiver reproduction in which an average tonal output is achieved; Med-- reproduction in which the higher tones are moderately attenuated; Low--in this position the higher tones are subdued emphasizing the lower tones.

The A.F. GAIN-A.C. OFF control is a dual purpose type. In the A.C. OFF position the Receiver is turned off; when the control knob is turned clockwise the A.C. line switch is closed, thus turning on the Receiver. The other function of this control is to adjust the audio output volume of the Receiver. Audio volume is progressively increased to a maximum when the knob is turned to the extreme clockwise position.

The control switch labeled C.W.O., M.V.C., A.V.C. and A.N.L. has four functions corresponding to the switch markings. In the A.V.C. position the automatic volume circuit is switched into the circuit to compensate for fluctuating volume due to fading. In the A.N.L. position the automatic noise limiter is switched on to effectively reduce interference caused by static, automobile ignition noise etc. Limiting action automatically takes place at a relatively high percentage modulation. The automatic volume control circuit remains operative in the A.N.L. position of the control switch. The M.V.C. position disables the A.V.C., C.W.O. and A.N.L. circuits. The C.W.O. position switches into the circuit the C.W. oscillator to permit reception of code telegraph signals.

The PITCH control is used in conjunction with the C.W.O. position of the control switch and has no effect on receiver performance with any other control switch setting. The PITCH control is used to adjust the beat note of the incoming code signal to an audio tone pleasing to the operator. The C.W. oscillator is tuned to the Receiver's intermediate frequency mid-scale on the control knob. The range of the PITCH control is approximately ±3,000 cycles.

The SEND-RECEIVE switch is used to quiet the Receiver during transmission periods or other times when it is desirable to be able to resume reception immediately after a period of silence (i.e. not having to wait for the tubes to warm up).

The SEND-RECEIVE switch should not be used to shut off the Receiver. The Receiver should be turned off by turning the A.F. GAIN control to A.C. OFF position.

The main tuning control knob and dial scale are used to tune the frequency range of the Receiver. The band of frequencies tuned at any one time is determined by the BAND switch setting. To maintain correct calibration when using the main tuning knob the bandspread dial pointer must be at the "set" mark (located at 100 on the bandspread dial scale).

The bandspread control knob and dial scale are used to spread out over a wide range any small portion of the frequency range of the Receiver. Bandspread tuning is accomplished by setting the main tuning dial pointer at the high-frequency limit of the band of frequencies to be spread (for example: to tune the amateur 10 meter band set the pointer at 29.7 megacycles on the B band) and rotate the bandspread knob in a clockwise direction.

3-2. VOICE OR MUSIC RECEPTION

After the NC-57M Receiver is properly installed, as outlined in Section 2, it is placed in operation by adjusting the receiver controls as follows:

1. Set the SEND-RECEIVE switch at Receive.

2. Turn the R.F. GAIN control to the extreme clockwise position

3. Set the control switch at A.V.C.

4. Set the BAND switch at the band of frequencies to be tuned. The Standard Broadcast Band is band E.

5. Set the bandspread dial pointer at the "Set"mark.

6. Set the main tuning dial pointer at the desired frequency.

7. Turn the A.F. GAIN-A.C. OFF control from the A.C. OFF position to the point providing the desired audio volume. Reset the main tuning dial pointer if necessary.

8. Set the TONE control at High.

9. Set the TRIMMER control for maximum response. In order to secure a good aural indication of the correct TRIMMER setting, it is recommended that the control switch be set at M.V.C. temporarily to adjust the TRIMMER control. In this case it may be necessary to retard the R.F. GAIN control if overload of the Receiver occurs, as will be indicated by excessive distortion. In the absence of signals the trimmer control may be "peaked" by setting it for maximum receiver background noise.

The settings given above are for the reception of signals of average strength. An improvement in the reception of exceptionally weak signals or signals accompanied by interfering noise pulses may be realized by modification of the above settings.

For improvement in the reception of weak signals set the control switch at M.V.C. and modify the other control settings as follows:

1. Set the A.F. GAIN control at approximately three-quarters rotation.

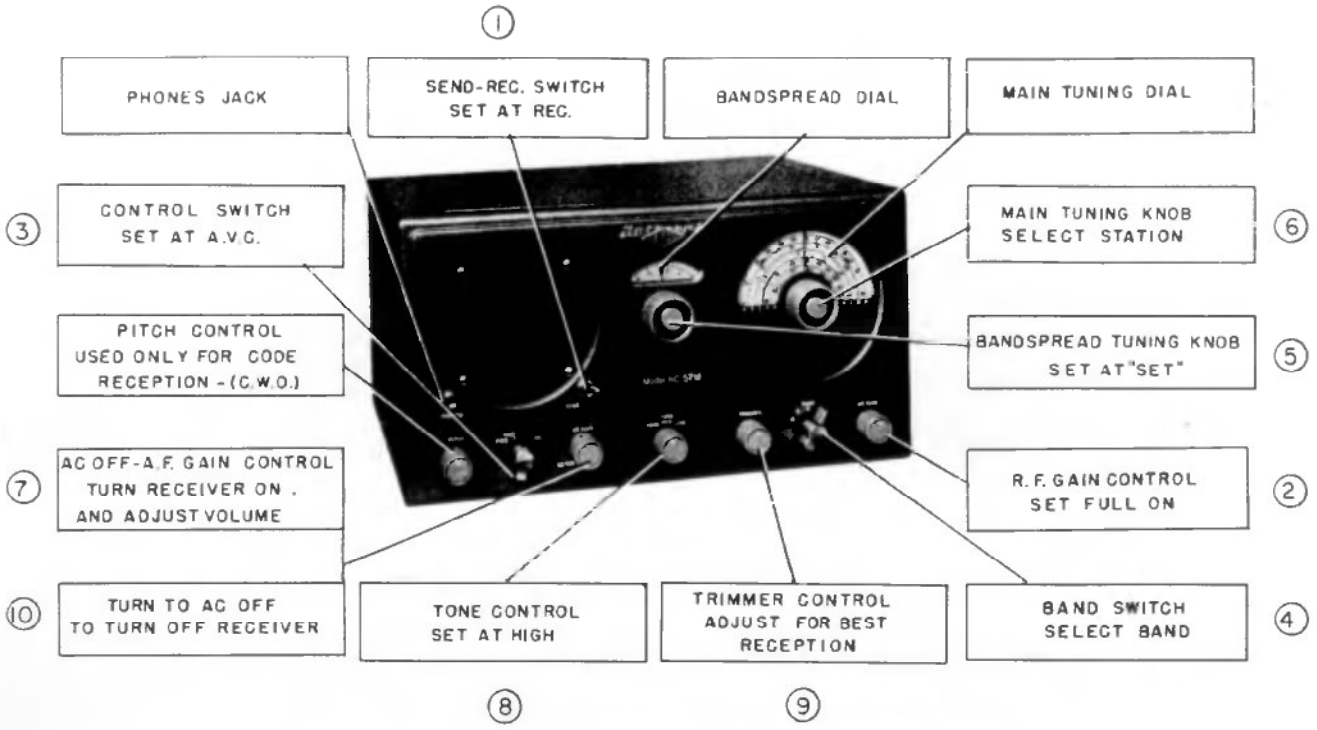

Figure No. 2. Simplified Operating Instructions

2. Adjust the audio volume by means of the R.F. GAIN control.

When a signal is accompanied by static peaks or noise pulses of high intensity and short duration, optimum noise-free reception will be had by setting the control switch at A.N.L. The resulting automatic limiting action will greatly reduce the interfering noise without noticeably affecting the signal. Best limiting action will be realized with the R.F. GAIN control fully advanced; the audio volume should be adjusted by means of the A.F. GAIN control. A further improvement in noise reduction will be realized by setting the TONE switch at Med. or Low depending on the degree of noise.

3-3. CODE TELEGRAPHY RECEPTION

The adjustment of the receiver controls for code reception is the same as that for voice or music except for the following.

1. Set the control switch at C.W.O.
2. Set the A.F. GAIN control at three-quarters rotation.
3. Adjust the audio volume by means of the R.F. GAIN control.
4. Adjust the PITCH control to secure an audio tone pleasing to copy.

The action of the TONE control is the same as that described in Section 3-2.

SECTION 4. MAINTENANCE AND TEST DATA

4-1. GENERAL MAINTENANCE DATA

The NC-57M is designed and constructed to assure a long period of uninterrupted service. A few service hints are given below to aid in locating individual components which, due to age or weakness, cause faulty operation of the Receiver.

Vacuum tube failure may be evidenced by reduction in sensitivity, intermittent operation or an inoperative Receiver. Tubes may be checked in suitable tube testing equipment, or by replacement with tubes of proven quality. Care must be taken that tubes removed for checking are returned to their original sockets. Tubes of the same type will vary slightly in their individual characteristics and this fact should be borne in mind if replacement of the H.F. oscillator tube becomes necessary. A check of the dial calibration should be made if this tube is replaced to determine whether or not realignment is necessary.

Bypass or filter capacitors which become open may cause decreased sensitivity, oscillation, poor stability or complete failure of the Receiver. The defective unit can be located by temporarily connecting a good capacitor in parallel with each suspected capacitor. Leaky or short-circuited capacitors can be detected by an ohmmeter check; a zero resistance reading of the ohmmeter will indicate a shorted capacitor.

Defective resistors, sometimes caused by capacitor failure in associated circuits, can be definitely located by measuring the resistance of each resistor. The Schematic Diagram should be consulted to ascertain that any particular resistor under test is not connected in parallel with some other circuit element which might produce a false measurement. An overload resistor may be located by visual inspection if the surface of the resistor becomes scorched due to excessive heating.

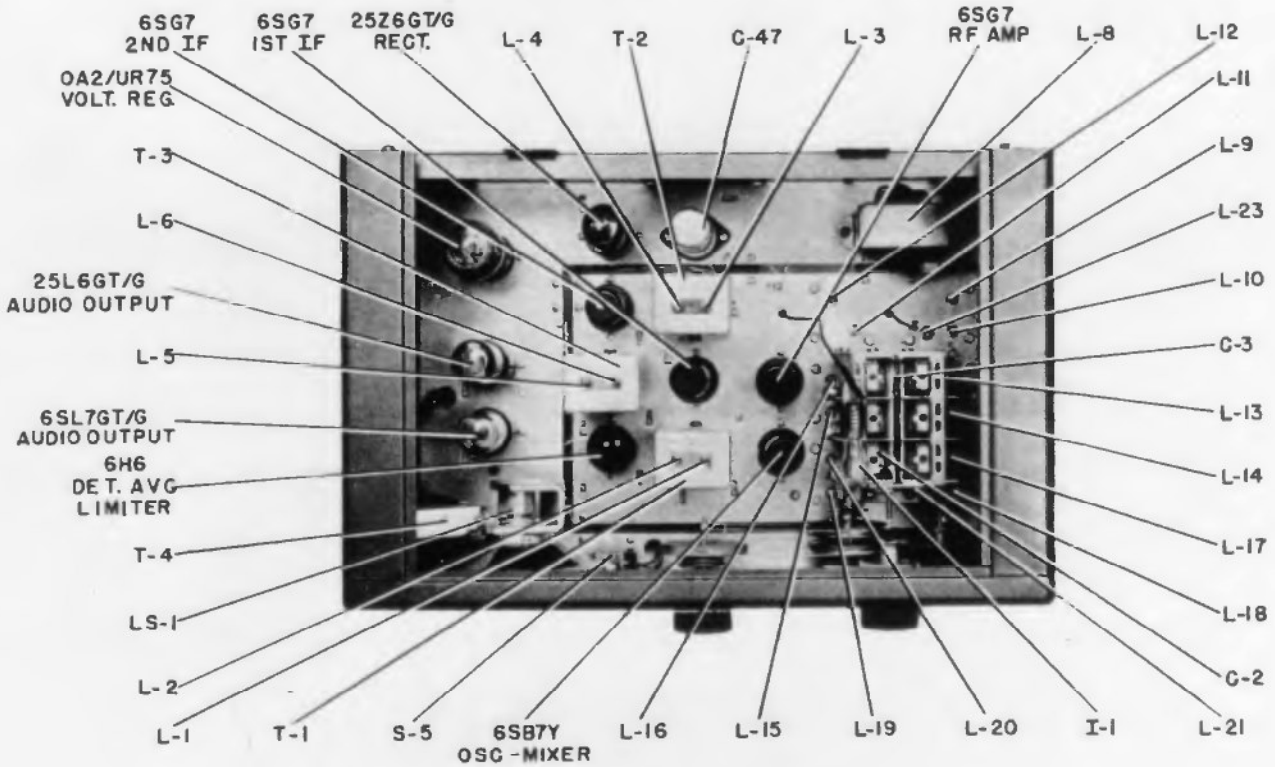

Figure No. 3. Top View of Receiver

4-2. VOLTAGE TABULATIONS

The measurements of voltage shown on the following table are tabulated using a high-impedance vacuum tube voltmeter with a line voltage of 115 volts. The control settings to be observed are as follows:

1. R.F. GAIN full on (extreme clockwise position).
2. BAND switch at E.
3. Main tuning dial pointer at 1.5 mc.
4. Control switch at M.V.C. except as noted.

All voltages are measured between specified terminal and chassis.

TUBE TERMINAL	PIN	VOLTS ±15%
R.F. Amp. Cathode	3&5	1.0
R.F. Amp. Screen	6	70.0
R.F. Amp. Plate	8	78.0
H.F. Osc. Plate	3	92.0
First Det. Grid	4	50.0
H.F. Osc. Grid	5	-4.4
First I.F. Amp. Cathode	3&5	.8
First I.F. Amp. Screen	6	35.0
First I.F. Amp. Plate	8	95.0
Second I.F. Amp. Cathode	3&5	1.8
Second I.F. Amp. Screen	6	92.0
Second I.F. Amp. Plate	8	96.0
Limiter Plate	3	-.5*
Limiter Cathode	4	.3*
Second Detector Plate	5	-.6*
First Audio Plate	2	48
First Audio Cathode	3	1.2
C.W. Oscillator Grid	4	-1.8**
C.W. Oscillator Plate	5	68.0**
Audio Output Plate	3	90.0
Audio Output Screen	4	96.0
Audio Output Cathode	8	6.0
Rectifier Fil.	4	115.0
Rectifier Plate	3	110.0 A.C.
Rectifier Plate	5	110.0 A.C.
Rectifier Fil.	6	115.0
Voltage Regulator Anode	5	75.0

*Control Switch at A.N.L.
**Control Switch at C.W.O.

SECTION 5. ALIGNMENT DATA

5-1. GENERAL

The alignment of the NC-57M may be divided into two steps:

1. Intermediate Frequency Amplifier Alignment.
2. General Coverage Alignment
   a. H.F. Oscillator
   b. First Detector and R.F. Amplifier

The necessity for any realignment may be determined by checking the performance of the Receiver against its normal operation, as outlined in Section 3, and the dial calibration. It is recommended that, if tests indicate realignment is required, the instructions given in this section are thoroughly read and understood before realignment is attempted. For alignment purposes the Receiver should be set up as specified in Section 2-1 except that the antenna should be disconnected. An output meter with a resistive load of 8 ohms should be connected to the Phones jack on the front panel of the Receiver.

5-2. I.F. AMPLIFIER ALIGNMENT

The intermediate frequency of the NC-57M Receiver is 455 kilocycles. The two I.F. transformers and the detector input transformer have permeability tuned iron-core inductors with screw adjustments for alignment purposes. These adjustments are accessible from the top inside of the cabinet as shown on Figure No. 3.

The alignment procedure is as follows:

1. Connect the "high" output lead of an accurately calibrated signal generator to the stator of the detector portion of the main tuning capacitor, C-2B, and the grounded lead to any convenient grounded point on the chassis. This is a direct connection, no dummy antenna being required. Set the signal generator at 455 kilocycles and turn the modulation on.

2. Set the control switch at M.V.C.

3. Set the R.F. GAIN control full on.

4. Set the TONE switch at High.

5. Set the A.F. GAIN full on.

6. Adjust the output attenuator of the signal generator to provide a signal of approximately 100 microvolts. While making I.F. amplifier adjustments, it will be necessary to retard the attenuator of the signal generator if I.F. amplifier gain increases to a point where overload occurs.

7. Adjust the I.F. tuned inductors L-1 through L-6 for maximum gain, as indicated on the output meter. The order in which these adjustments are made is not important.

At the conclusion of the I.F. amplifier alignment the tuning of the C.W. oscillator may be checked by turning the modulation of the signal generator off and

setting the control switch at C.W.O. With this setting zero beat with the test signal should occur with the PITCH control set at mid-scale. If the above test indicates realignment of the C.W. oscillator is required procede as follows:

1. Remove the bottom cover of the Receiver.

2. Loosen the set screws on the collar of the C.W. oscillator transformer shaft.

3. Without loosening the PITCH control knob on its shaft withdraw the knob and shaft from the cabinet.

4. The screw driver adjustment on the C.W. oscillator inductor, L-7, will then be accessible through the shaft opening in the cabinet. Adjust L-7 for zero beat with the test signal.

5. Replace the PITCH control knob and shaft so that the white dot on the knob is at mid-scale.

6. Position the collar so that the set screw is directly opposite (180°) from the stop and tighten the set screw making sure that the position of the PITCH control knob does not change from mid-scale.

5-3. GENERAL COVERAGE ALIGNMENT

General Coverage alignment and bandspread alignment are accomplished simultaneously, since the main tuning and bandspread tuning capacitors are connected in parallel on all bands. The Receiver should be set up as specified in Section 2-1 except that the antenna should be disconnected. Adjustment of the H.F. oscillator and first detector trimmers can be made through the holes in the bottom cover of the Receiver after removal of the small cover plate. See Figure No. 4. Some inductor adjustments are accessible from the top inside of the cabinet; all from the bottom of chassis. The preliminary alignment procedure is as follows:

1. Connect an accurate signal source (signal generator or crystal oscillator) to the antenna input terminal through a standard dummy antenna of 300 ohms.

2. Connect an output meter with a resistive load of 8 ohms to the Phones jack.

3. Set the control switch at M.V.C.

4. Turn the R.F. GAIN control to full on.

5. Set the bandspread and main tuning dials as shown on the Alignment Table.

The Alignment Table in this section outlines the procedure for alignment of the H.F. oscillator, first detector and R.F. amplifier stages.

(a) H.F. Oscillator

Care should be taken when aligning the H.F. oscillator of any band to insure that the oscillator is aligned to the fundamental frequency and not the image. This can be checked by tuning the Receiver to the image frequency. On the B band the image should appear 910 kilocycles above the fundamental signal. On the A, C, D

and E bands the image should appear 910 kilocycles below the fundamental signal. If the image does not appear at its correct setting the H.F. oscillator trimmer should be adjusted for the correct calibration.

ALIGNMENT TABLE

Step	Band	Adjust Signal Source To:	Set Main Tun. Dial At:	Set Bandspread Dial At:	Adjust To Receive Test Signal	Adjust For Maximum Output
1	A	400 Kc.	400 Kc.	Set	C-48	C-11, C-5, C-4
2	A	200 Kc.	200 Kc.	Set	C-59, L-21	L-22, L-23
3	A	400 Kc.	400 Kc.	Set	C-48	Check Step 1. Repeat Steps 1, 2 and 3 if necessary.
1	B	34.0 Mc.	34.0 Mc.	Set	C-49	C-12, C-4
2	B	12.0 Mc.	12.0 Mc.	Set	L-17	L-13#, L-9
3	B	34.0 Mc.	34.0 Mc.	Set		Check Step 1. Repeat Steps 1, 2 and 3 if necessary.
1	C	12.0 Mc.	12.0 Mc.	Set	C-51	C-13, C-4
2	C	4.4 Mc.	4.4 Mc.	Set	L-18	L-14, L-10
3	C	12.0 Mc.	12.0 Mc.	Set		Check Step 1. Repeat Steps 1, 2 and 3 if necessary.
1	D	4.4 Mc.	4.4 Mc.	Set	C-52	C-14, C-4
2	D	1.6 Mc.	1.6 Mc.	Set	L-19	L-15*, L-11
3	D	4.4 Mc.	4.4 Mc.	Set		Check Step 1. Repeat Steps 1, 2 and 3 if necessary.
1	E	0.6 Mc.	0.6 Mc.	Zero	L-20	L-16, L-12
2	E	1.5 Mc.	1.5 Mc.	Set	C-55	C-15, C-4
3	E	0.6 Mc.	0.6 Mc.	Set		Check calibration. Repeat Steps 1, 2 and 3 if necessary.

#Loop inside coil form for adjustment.
*Accessible only from bottom of chassis.

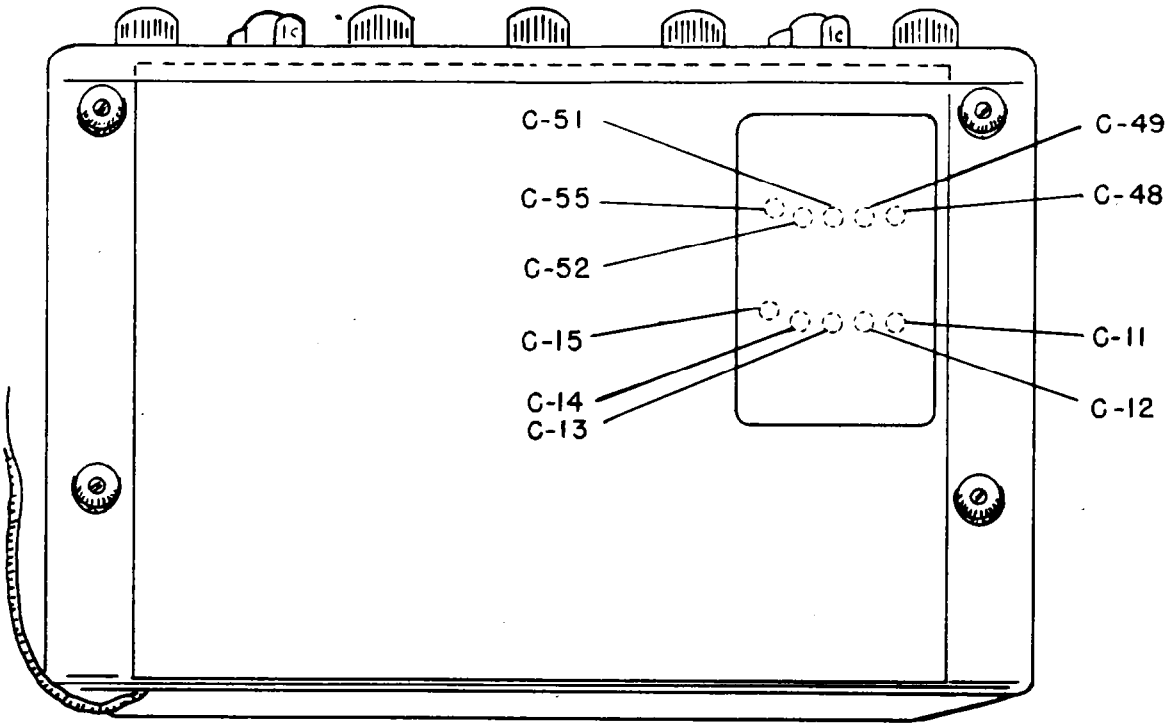

Figure No. 4. Alignment Trimmer Locations

PARTS LIST

SYMBOL	FUNCTION	DESCRIPTION	NAT. CO. TYPE
		CAPACITORS	
C-1	E Band R.F. Amp. Filter	Paper; 0.01 mfd 120 vdcw	K589-4
C-2	Bandspread Tuning	Air, Variable	K318-1
C-2A	R.F. Bandspread Tuning	Part of C-2	
C-2B	1st. Det. Bandspread Tuning	Part of C-2	
C-2C	H.F. Osc. Bandspread Tuning	Part of C-2	
C-3	Main Tuning	Air; Variable	K318-2
C-3A	R.F. Tuning	Part of C-3	
C-3B	1st. Det. Tuning	Part of C-3	
C-3C	H.F. Osc. Tuning	Part of C-3	
C-4	Trimmer Control	Air; Variable	K351-3
C-5	A Band R.F. Amp. Trimmer	Ceramic; Variable 7-35 mmf	E311-4
C-6	Not Used		
C-7	B Band 1st. Det. Coupling	Ceramic; 15 mmf 500 vdcw	D825D-405
C-8	R.F. Amp. Grid Coupling	Mica; 100 mmf 500 vdcw	J665-32
C-9	R.F. Amp. Cathode Bypass	Paper; 0.01 mfd 400 vdcw	D827-5
C-10	R.F. Amp. Screen Bypass	Paper; 0.01 mfd 400 vdcw	D827-5
C-11	A Band 1st. Det. Trimmer	Mica; Variable 1.8-40 mmf	D832-3
C-12	B Band 1st. Det. Trimmer	Mica; Variable 1.8-40 mmf	D832-3
C-13	C Band 1st. Det.Trimmer	Mica; Variable 1.8-40 mmf	D832-3
C-14	D Band 1st. Det. Trimmer	Mica; Variable 1.8-40 mmf	D832-3
C-15	E Band 1st. Det. Trimmer	Mica; Variable 1.8-40 mmf	D832-3
C-16	A Band 1st. Det. Fixed Trimmer	Ceramic; 38.5 mmf 500 vdcw	D825D-414
C-17	R.F. Amp. Plate Filter	Mica, 0.001 mfd 300 vdcw	J665-71
C-18	Cathode Bus Filter	Paper; 0.1 mfd 400 vdcw	D827-11
C-19	H.F. Osc. Grid Coupling	Mica; 100 mmf 500 vdcw	J665-32

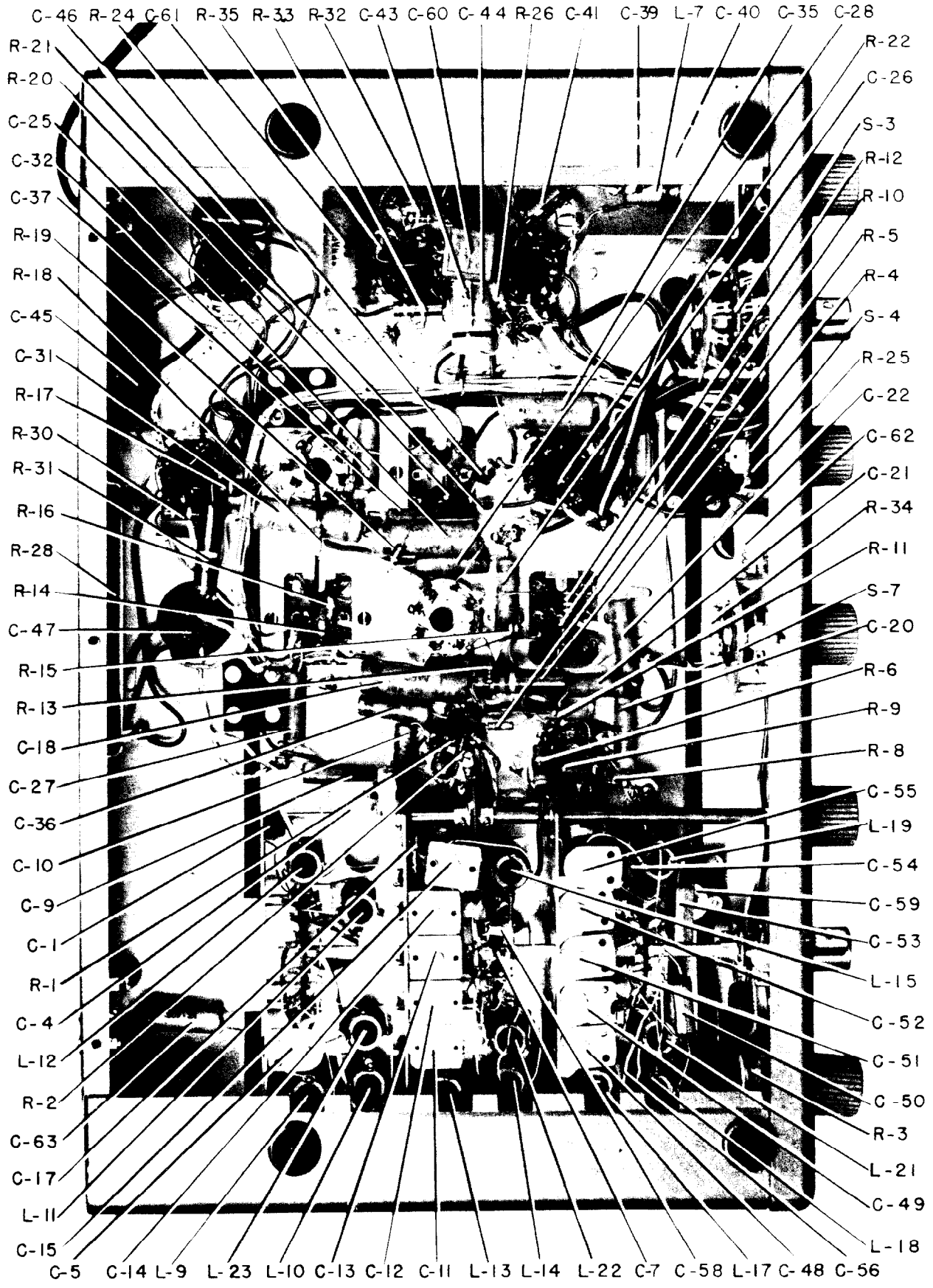

Figure No. 5. Bottom View of Receiver

PARTS LIST (CONT'D.)

SYMBOL	FUNCTION	DESCRIPTION	NAT. CO. TYPE
		CAPACITORS (CONT'D.)	
C-20	1st. Det. Screen Bypass	Paper; 0.01 mfd 400 vdcw	D827-5
C-21	1st. Det. Plate Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-22	1st. I.F. Amp. Grid Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-23	T-1 Pri. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-24	T-1 Sec. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-25	1st. I.F. Amp. Cathode Bypass	Paper; 0.1 mfd 400 vdcw	D827-11
C-26	1st. I.F.Amp. Screen Bypass	Paper; 0.01 mfd 400 vdcw	D827-5
C-27	1st. I.F. Amp. Plate Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-28	2nd. I.F. Grid Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-29	T-2 Pri. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-30	T-2 Sec. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-31	2nd. I.F. Amp. Cathode Bypass	Paper; 0.1 mfd 400 vdcw	D827-11
C-32	2nd. I.F. Amp. Screen Bypass	Paper; 0.01 mfd 400 vdcw	D827-5
C-33	T-3 Pri. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-34	T-3 Sec. Tuning	Silver Mica; 510 mmf 500 vdcw	H500-5
C-35	Limiter Cathode Filter	Paper; 0.1 mfd 400 vdcw	D827-11
C-36	A.V.C. Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-37	2nd. Det. Load	Mica; 100 mmf 500 vdcw	J665-32
C-38	C.W.O. Coupling	3 Turns Insulated Wire	
C-39	C.W.O. Plate Coupling	Paper; 0.01 mfd 400 vdcw	D827-5
C-40	C.W.O. Tuning	Silver Mica; 220 mmf 500 vdcw	H500-20
C-41	C.W.C. Grid Coupling	Mica; 270 mmf 500 vdcw	J665-47
C-42	Audio Coupling	Paper; 0.01 mfd 400 vdcw	D827-5
C-43	1st. Audio Plate Filter	Paper; 250 mmf 600 vdcw	D827-34
C-44	1st. Audio Cathode Bypass	Elect; 10 mfd 50 vdcw	E338-9
C-45	A.C. Line Bypass	Paper; .1 mfd 400 vdcw	D827-11
C-46	B Supply Filter	Paper; 0.01 mfd 400 vdcw	D827-5
C-47	Power Supply Filter	Elect; 50 + 50 mfd 200 vdcw	K944-2
C-47A	Power Supply Filter	Part of C-47	
C-47B	Power Supply Filter	Part of C-47	
C-48	A Band H.F. Osc. Trimmer	Ceramic; Variable 7-35 mmf	E311-4
C-49	B Band H.F. Osc. Trimmer	Ceramic; Variable 5-20 mmf	E311-2
C-50	C Band H.F. Osc. Padder	Mica; .0043 mfd 500 vdcw	J666-37
C-51	C Band H.F. Osc. Trimmer	Ceramic; Variable 5-20 mmf	E311-2
C-52	D Band H.F. Osc. Trimmer	Ceramic; Variable 5-20 mmf	E311-2
C-53	D Band H.F. Osc. Padder	Mica; 0.0013 mfd 500 vdcw	J666-18
C-54	E Band H.F. Osc. Padder	Silver Mica; 510 mmf 500 vdcw	H500-5
C-55	E Band H.F. Osc. Trimmer	Ceramic; Variable 5-20 mmf	E311-2
C-56	Fixed Trimmer	Mica, 150 mmf 500 vdcw	J665-37
C-57	A Band H.F. Osc. Padder	Mica; 390 mmf 500 vdcw	J665-52
C-58	C Band 1st. Det. Coupling	Ceramic; 5 mmf 500 vdcw	D825D-401
C-59	A Band Osc. Padder	Ceramic, Variable 7-35 mmf	E311-4
C-60	Audio Coupling	Paper; 0.001 mfd 600vdcw	D327-32
C-61	Audio Output Cathode Bypass	Elect; 25 mfd 50 vdcw	E338-4
C-62	Tone	Paper; 0.1 mfd 400 vdcw	D827-11
C-63	Blocking	Paper; .02 mfd 400 vdcw	D827-43

PARTS LIST (CONT'D.)

SYMBOL	FUNCTION	DESCRIPTION	NAT. CO. TYPE
		RESISTORS	
R-1	R.F. Amp. Grid Filter	Fixed; 150,000 ohms 1/2 W.	J569-51
R-2	R.F. Amp. Cathode	Fixed; 220 ohms 1/2 W.	J569-17
R-3	R.F. Gain Control	Variable; 10,000 ohms 2 W.	K349-3
R-4	B Plus Bleeder	Fixed; 68,000 ohms 2 W.	J572-47
R-5	R.F. Amp. Screen Filter	Fixed; 1,000 ohms 1/2 W.	J569-25
R-6	R.F. Amp. Plate Filter	Fixed; 4,700 ohms 1/2 W.	J569-33
R-7	A.V.C. Bleeder	Fixed; 1,000,000 ohms 1/2 W.	J569-61
R-8	H.F. Osc. Grid	Fixed; 33 ohms 1/2 W.	J569-7
R-9	H.F. Osc. Grid Leak	Fixed; 15,000 ohms 1/2 W.	J569-39
R-10	1st. Det. Plate Filter	Fixed; 1,000 ohms 1/2 W.	J569-25
R-11	1st. Det. Screen Filter	Fixed; 3,900 ohms 1/2 W.	J569-32
R-12	1st. I.F. Amp. Grid Filter	Fixed; 470,000 ohms 1/2 W.	J569-57
R-13	1st. I.F. Amp Cathode	Fixed; 820 ohms 1/2 W.	J569-24
R-14	1st. I.F. Amp. Plate Filter	Fixed; 1,000 ohms 1/2 W.	J569-25
R-15	1st. I.F. Amp. Screen Filter	Fixed; 220,000 ohms 1/2 W.	J569-53
R-16	2nd. I.F. Grid Filter	Fixed; 470,000 ohms 1/2 W.	J569-57
R-17	2nd. I.F. Amp. Cathode	Fixed; 220 ohms 1 W.	J571-17
R-18	2nd. I.F. Amp. Screen Filter	Fixed; 2,200 ohms 1/2 W.	J569-29
R-19	A.V.C. Filter	Fixed; 2,200,000 ohms 1/2 W.	J569-65
R-20	Limiter Filter	Fixed; 1,000,000 ohms 1/2 W.	J569-61
R-21	2nd. Det. Load	Fixed; 1,000,000 ohms 1/2 W.	J569-49
R-22	2nd. Det. Load	Fixed; 220,000 ohms 1/2 W.	J569-53
R-23	C.W.C. Plate Filter	Fixed; 10,000 ohms 1/2 W.	J569-37
R-24	Limiter Cathode	Fixed; 1,000,000 ohms 1/2 W.	J569-61
R-25	Audio Gain Control	Variable, 500,000 ohms with SPST switch	K347-1
R-26	1st. Audio Cathode	Fixed; 10,000 ohms 1/2 W.	J569-37
R-27	C.W.O. Grid	Fixed; 22,000 ohms 1/2 W.	J569-41
R-28	Line Dropping	Fixed; 100 ohms 20 W.	M699-1
R-29	1st. Audio Plate Filter	Fixed; 470,000 ohms 1/2 W.	J569-57
R-30	Current Limiting	Fixed; 33 ohms 1 W.	J571-7
R-31	B Plus Dropping	Fixed; 820 ohms 2 W.	J572-24
R-32	Audio Output Grid	Fixed; 470,000 ohms 1/2 W.	J569-57
R-33	Audio Output Cathode	Fixed; 150 ohms 1 W.	J571-15
R-34	Tone	Fixed; 4,700 ohms 1/2 W.	J569-33
R-35	Audio Output Plate Load	Fixed; 47,000 ohms 1/2 W.	J569-45
		MISCELLANEOUS	
I-1	Dial Lamp	110 Volts 6 Watts Candelabra Base	F136-10
J-1	Phones Jack	Closed Circuit Midget Type	K314-1
L-1	T-1 Input Tuning	Inductor, Variable Iron Core	
L-2	T-1 Output Tuning	Inductor, Variable Iron Core	
L-3	T-2 Input Tuning	Inductor, Variable Iron Core	
L-4	T-2 Output Tuning	Inductor, Variable Iron Core	
L-5	T-3 Input Tuning	Inductor, Variable Iron Core	
L-6	T-3 Output Tuning	Inductor, Variable Iron Core	

PARTS LIST (CONT'D.)

SYMBOL	FUNCTION	DESCRIPTION	NAT. CO. TYPE
		MISCELLANEOUS (CONT'D.)	
L-7	C.W. Osc. Tuning	Inductor, Variable Brass Core	
L-8	Filter Choke	10 Henries, 100 ma	K317-1
L-9	B Band R.F. Amp. Ind.	Variable Iron Core	
L-10	C Band R.F. Amp. Ind.	Variable Iron Core	
L-11	D Band R.F. Amp. Ind.	Variable Iron Core	
L-12	E Band R.F. Amp. Ind.	Variable Iron Core	
L-13	B Band 1st. Det. Ind.	Adjustable Loop	
L-14	C Band 1st. Det. Ind.	Variable Iron Core	
L-15	D Band 1st. Det. Ind.	Variable Iron Core	
L-16	E Band 1st. Det. Ind.	Variable Iron Core	
L-17	B Band H.F. Osc. Ind.	Variable brass core	
L-18	C Band H.F. Osc. Ind.	Variable Iron Core	
L-19	D Band H.F. Osc. Ind.	Variable Iron Core	
L-20	E Band H.F. Osc. Ind.	Variable Iron Core	
L-21	A Band H.F. Osc. Ind.	Variable Iron Core	
L-22	A Band 1st. Det. Ind.	Variable Iron Core	
L-23	A Band R.F. Amp. Ind.	Variable Iron Core	
P-1	A.C. Line Cord and Plug	2 Wire	E544-1
S-1	R.F. Transformer Band Switch	Rotary	K752-1
S-1A		D.P. 5 Position	
S-1B		S.P. 5 Position	
S-1C		S.P. 2 Position	
S-2	1st. Det. Trans. Band Switch		K752-1
S-2A		D.P. 5 Position	
S-2B		S.P. 5 Position	
S-2C		S.P. 2 Position	
S-3	Control Switch	Rotary	SA:6337
S-3A	C.W.C. Switch	S.P. 4 Position	
S-3B	Limiter Switch	S.P. 4 Position	
S-3C	A.V.C. Switch	S.P. 4 Position	
S-4	A.C. Line Switch	Toggle S.P.S.T.	Part of R-25
S-5	Send-Rec. Switch	Toggle S.P.S.T.	H340-3
S-6	H.F. Osc. Trans. Band Switch	Rotary	K752-1
S-6A		D.P. 5 Position	
S-6B		S.P. 5 Position	
S-6C		S.P. 2 Position	
S-7	Tone Switch	Rotary, S.P. 3 Position	SA:4567
T-1	1st. I.F. Trans.	455 Kc.	SA:4875
T-2	2nd. I.F. Transformer	455 Kc.	SA:4533
T-3	Det. Input Trans.	455 Kc.	SA:4533
T-4	Audio Output Trans.	2,000/4 Ohms	K313-2
LS-1	Loud-speaker	5" P.M.	J726-1

NOTES

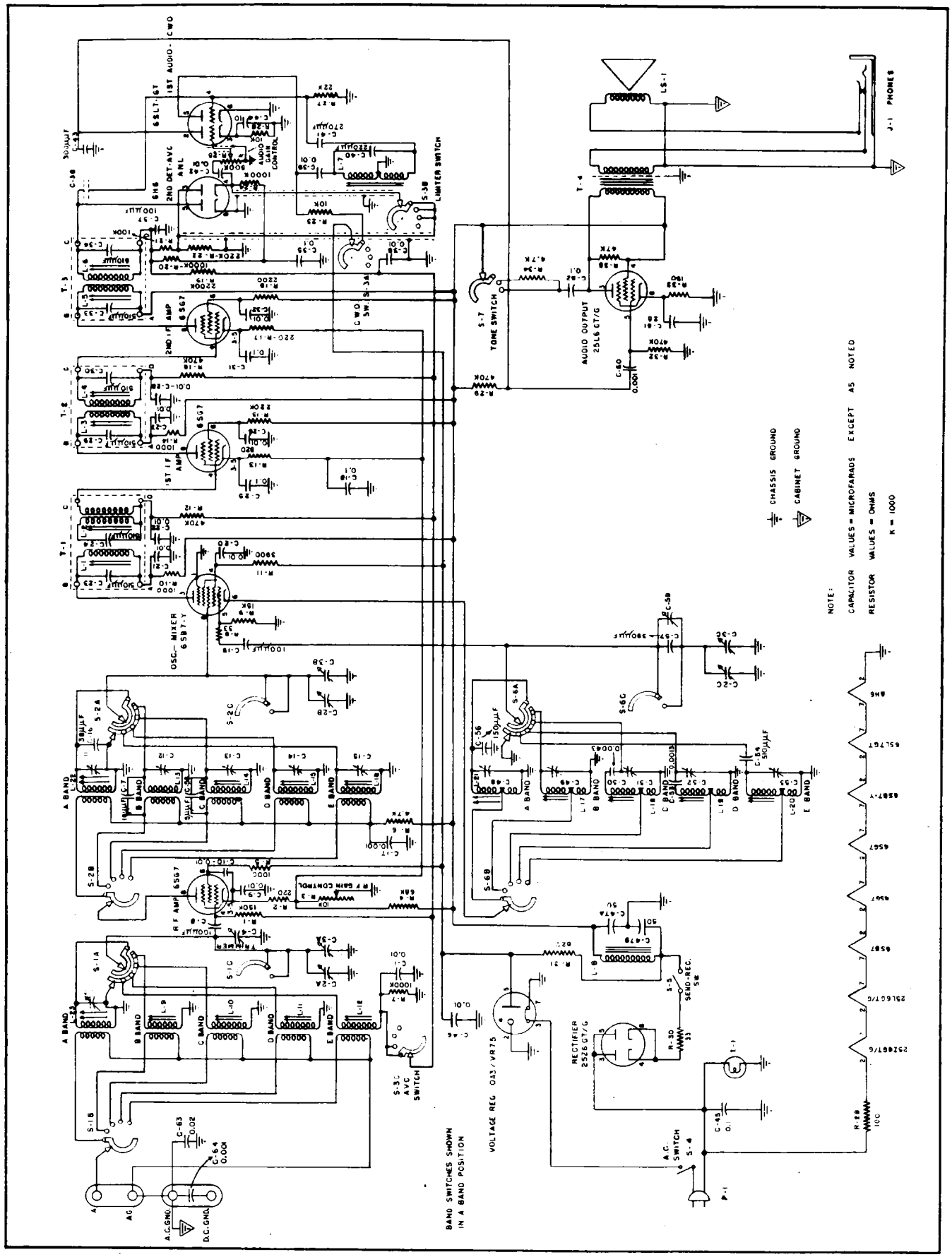

Figure No 6. Schematic Diagram--NC-57M Receiver